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# Polycyclic aromatic hydrocarbons in the sediments of the South China Sea

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## Abstract

Sixteen sediment samples, collected from the South China Sea, were analyzed for 11 parent polycyclic aromatic hydrocarbons (PAHs) using gas chromatography and gas chromatography–mass spectrometry. Total concentrations of the 11 PAHs studied in the sediments ranged from 24.7 to 275.4 ng/g with a mean of 145.9 ng/g dry sediment. PAH concentrations displayed a consistent distribution trend with the sediment organic carbon content. The linear regression analysis showed that the total concentration of PAHs in the sediment was significantly correlated to the sediment organic carbon content with a correlation coefficient of 0.735 ( $n=16$ ). Special PAH compound ratios, such as phenanthrene/anthracene and fluoranthene/pyrene, were calculated to evaluate the relative importance of different origins. The collected data showed that pyrolytic input from anthropogenic combustion processes was predominant at almost all the stations investigated. Only one station, located in the proximity of oil wells, appeared to

be contaminated predominantly by petrogenic input. Three anthropogenic PAHs, i.e. pyrene, benzo[a]pyrene and benzo[e]pyrene, exhibited similar distribution patterns in the studied area, implying that these compounds possess identical sources. However, perylene did not entirely follow the distribution trend of the three PAHs, suggesting that the sediment perylene probably derived from other sources such as in situ biogenic origins. Dibenzothiophene, a sulfur heterocyclic aromatic compound, was also measured in this study.



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## Keywords

Polycyclic aromatic hydrocarbons; Analysis; Distribution; Marine sediments; South China Sea

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